

REMARKS

At the outset, it should be recalled that the presently claimed invention provides a packaging apparatus, which may be utilized for the packaging of various types of goods, such as foods, which involve a large number of processes (*e.g.*, feeding the packaging material or container, filling the container, closing the container and labeling the packaged goods) and which must be carefully coordinated with one another. Each of these process packaging steps, in turn, is subdivided into a large number of individual steps which are required to take place synchronously with one another.

The present invention for a packaging apparatus, as claimed, is equipped with sensors, actuators and a drive system, having a servo motor, a central control unit and a system for data transmission. The actual values of the sensors, actuators and the drive system are recorded, in digital form, in each case, and transferred, with the use of a transmission protocol, via the data transmission system to the central control unit. The central control unit evaluates the data and determines setpoint values or control commands, which are transmitted, in digital form, from the control unit by the data transmission system to the actuator or drive system. The data transmission between the sensors, actuators, drive system and the central control unit takes place wirelessly and the transmission protocol operates cyclically and with short cycle times, preferably in millisecond pulses.

In contrast to the prior art, the transmission protocol serves for synchronization of all sensors, actuators and drives, prepares the actual values and the determined setpoint

data of all drives in each cycle, with the accuracy of the synchronization being in the microsecond range. The transmission protocol of the invention maintains essential information redundantly and eliminates errors in data transmission, preferably by the HDLC procedure.

As will be explained in greater detail hereinafter, nowhere in the prior art is such a novel and efficient packaging machine, useful for packaging containers, such as a multiplicity of food boxes and jars, for which the accuracy of the time synchronization is in the microsecond range, either disclosed or suggested and, further, that the currently pending set of claims are respectfully submitted to be in condition for allowance at this time.

Turning now, in detail, to the Examiner's prior art rejection, in the latest Office Action the Examiner has withdrawn the anticipation rejection of the first Office Action and has now rejected Applicants' independent Claim 28 (and various dependent claims) as being obvious, pursuant to 35 U.S.C. §103(a), over Johnson, U.S. Patent No. 6,788,980, taken in view of both J. Elson *et al.*, "Time Synchronization for Wireless Sensor Networks," *International Parallel and Distributed Processing Symposium* (April 2001) and Jerney. Elson, "Time Synchronization in Wireless Sensor Networks," *Dissertation by Jeremy Elson* (June 29, 2003.) It is the Examiner's contention that the primarily-applied reference of Johnson discloses a packaging machine comprising essentially all of the structural elements as recited in Applicants' independent claim, including means for data transmission to a plurality of sensors or a drive system; means for evaluating data received by a central control unit from the plurality of sensors; and

means for eliminating errors by use of redundancy in the means for data transmission and the means for transmission in a digital format. The Examiner has acknowledged, however, that Johnson does not show a transmission protocol for the wireless transmission means operating cyclically with short cycle times and performing a synchronization of the plurality of sensors, the plurality of actuators and the drive system with time-dependent action and further providing the actual values and the setpoint values, or control commands, for the drive system in each cycle and accuracy of the synchronization in a microsecond range.

The Examiner has, therefore, secondarily applied two documents authored (at least in part) by Jeremy Elson for the proposition that research done on time synchronization in wireless sensor/actuator networks, which provide data at each cycle, purportedly show that such time synchronization is “capable of precision on the order of 1 microsecond.”

The Examiner has, therefore, concluded that it would have been obvious for one skilled in the art to have used the “concepts” presented in the Elson documents to improve the time synchronization of the packaging apparatus, as disclosed by Johnson, from the 50-millisecond range into the microsecond range, thereby arriving at that which is now claimed by the present Applicants.

In reply to the Examiner’s obviousness rejection of the final Office Action, as an initial matter, Applicants respectfully object to the citation and application of the Jeremy Elson *Dissertation* on the ground that this document is not a “printed publication” and

would therefore not constitute “prior art” within the parameters of 35 U.S.C. §102, inasmuch as there is no evidence establishing the “public accessibility” of the Elson *Dissertation*. See, *SRI International, Inc. v. Internet Securities Systems, Inc.*, Appeal No. 2007-1065, at 13-14 (Fed. Cir., 1/8/2008) (being concurrently filed as an “NPL Document”) (“Because there are many ways in which a reference may be disseminated to the interested public, ‘public accessibility’ has been called the touchstone in determining whether a reference constitutes a ‘printed publication’ bar under 35 U.S.C. §102(b).” (emphasis in original)), citing *In re Hall*, 781 F.2d 897, 898-899, 228 USPQ 453, 455 (Fed. Cir. 1986). The Jeremy Elson *Dissertation* would appear to carry no Library of Congress catalog number or other indicia which might indicate that it was widely disseminated and available to anyone seeking to locate it.

Again referring to *SRI International*, *supra* at 16, the Federal Circuit stated that:

“From the perspective of cases lacking public accessibility, *Bayer* featured a graduate thesis in a university library. The library had not catalogued or placed the thesis on the shelves. Only three faculty member even knew about the thesis. *Application of Bayer*, 568 F.2d 1357, 1358-59 [196 USPQ 670, 673-675] (C.C.P.A. 1978). Under these circumstances, this court’s predecessor found that the thesis did not constitute a printed publication because a customary search would have not rendered the work reasonably accessible even to a person informed of its existence. *Id.* at 1362-62. Similarly, in *In re Cronyn*, the thesis document was in a library with an alphabetical index by the author’s name. This court found no public accessibility because ‘the only research aid in finding the theses was the student’s name, which of course, bears no relationship to the subject of the student’s thesis.’ *In re Cronyn*, 890 F.2d 1158, 1161 [13 USPQ2d 1070 1071-1072] (Fed. Cir. 1989).”

Inasmuch as a graduate thesis has, on at least two occasions, been held not to constitute a “printed publication” under 35 U.S.C. §102, it is respectfully contended that, without

clear evidence establishing the “public accessibility” of the Jeremy Elson *Dissertation*, the *Dissertation* is not a “printed publication,” and is therefore not citable as “prior art,” and must be withdrawn as a reference.

Further, the Examiner’s listing of the Jeremy Elson *Dissertation* on Form PTO-892 recites an alleged publication date of June 29, 2003. The undersigned attorney-of-record has been advised by his German patent associate, Dr. Wilfried Pöhner, that the German Patent Office has accorded Applicants’ corresponding P.C.T. international application a priority date of June 3, 2003 (*see*, documentation from the European Patent Office’s website and related correspondence being concurrently filed as an “NPL Document”), which German priority claim would antedate date of the *Dissertation*, as determined by the Examiner.

In view of the foregoing, it is respectfully contended that the Jeremy Elson *Dissertation*, made of record with the final Office Action, issued July 13, 2007, and applied by the Examiner in the obviousness rejections of the latest Office Action, should be withdrawn as a citable reference, as should the obviousness rejections which so apply the Jeremy Elson *Dissertation*.

The Examiner has not cited to any particular portion of the Jeremy Elson *Dissertation* and, for this reason, it is unclear to Applicants whether the *Dissertation* might be cumulative of J. Elson *et al.*, “Time Synchronization for Wireless Sensor Networks” (April 2001.) Assuming, *arguendo*, that the Examiner could rely exclusively on the disclosure of the J. Elson *et al.* publication to otherwise support the obviousness

rejection, application of the J. Elson *et al.* publication is respectfully contended to be misplaced: The one-microsecond precision discussed in J. Elson *et al.*, and cited by the Examiner for applying this publication, was achieved during laboratory conditions which cannot be considering realistic working conditions and which are submitted to not be readily reproducible. More particularly, J. Elson *et al.* states (at 5-6) that:

“All of these results, while encouraging, do come with a number of caveats. Our experiments results were performed under idealized laboratory conditions, using (equal-length) cables to directly connect the sender to the receivers. ***Real world conditions will require wireless links that are likely far more complex with more opportunities for variable delay.*** In addition, the relatively constant ambient temperature reduced the oscillators’ frequency drift over time. A real sensor network deployed outdoors might not be able let NTP free-run without an external time source for as long as we did in our experiment.”

(*Emphasis* added)

In order to be applied against a claim, “a prior art reference must also be enabling, such that one of ordinary skill in the art could practice the invention without undue experimentation.” *Novo Nordisk Pharmaceuticals Inc. v. Bio-Technology General Corp.*, 424 F.3d 1347, 1355, 76 USPQ2d 1811, 1816 (Fed. Cir. 2005). The J. Elson *et al.* publication makes clear that the “microsecond range” cited by the Examiner in concluding that the pending claims are obvious over the prior art is not readily reproducible under “[r]eal world conditions” and, absent wireless links that are “far more complex” than those discussed in the cited publication, “more opportunities for variable delay” can be expected. Further, under the idealized experimental conditions discussed in J. Elson *et al.*, it is clear that no means would have to be undertaken for eliminating errors from data transmission.

The experimental results achieved and reported by J. Elson *et al.* can only be described as extraordinary and not readily capable of duplication under practical working conditions by those of ordinary skill in the art without “undue experimentation,” which would require, as stated in J. Elson *et al.*, wireless links that are “far more complex.” Accordingly, the J. Elson *et al.* publication cannot reasonably be considered an enabling reference that can be properly combined with the primarily-applied reference of Johnson.

Further, it should be observed that J. Elson *et al.* is working with a sensor network, whereas the present Applicants claim a network that includes additional drive systems (*e.g.*, servo motors) and actuators, which form a specialized type of drive system, as part of a packaging machine. In this regard, the reading of sensor data is inherently fast, because only one single cycle is necessary.

In contrast to that disclosed and suggested by J. Elson *et al.*, even if properly enabling as a reference, the capability of controlling a drive and related means requires several cycles (at a minimum, two cycles.) In the initial cycle, the actual value of the drive is read and sent to the central control unit. At the central control unit, the actual value is compared with the determined set point value. Generally, there is a difference between both values with the result that, in the next cycle, a newly determined set point value is transferred to the drive. One skilled in the art of control techniques would be expected to be aware that the first cycle’s “reading the actual value,” plus the second cycle “delivering the determined set point value” (*i.e.*, control command value), is not sufficient data for making the actual value equal to the determined set point value. As a

general rule, at least five cycles would be required for accomplishing this task.

Applicants' invention, as most broadly recited by pending independent Claim 28, requires an accuracy of the synchronization of the drive system in each cycle within the range of one microsecond. This level of accuracy requires a time limit of 0.2 microseconds (for five cycles) for reading the actual position of the drive.

In contrast to that which is being claimed by Applicants, the J. Elson *et al.* publication is describing networks for sensors – not drives! Further, the applied combination of Johnson, taken in view of J. Elson *et al.*, fails to disclose or suggest a drive controlled by specifying position data at associated points in time via a wireless communication by RF, broad bands radio and infrared. The prior art, it is respectfully contended, provides no hint of controlling a drive with the accuracy to the level of one microsecond.

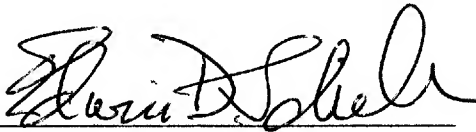
In light of the foregoing, withdrawal of the 35 U.S.C. §103(a) obviousness rejection of the final Office Action, which applies Johnson, taken in view of either, or both, Elson documents, is respectfully requested.

In view of the foregoing, it is respectfully contended that all claims now pending in the above-identified patent application (*i.e.*, Claims 28-42) recite a novel and efficient packaging machine, useful for packaging containers, such as a multiplicity of food boxes and jars, for which the accuracy of the time synchronization is in the microsecond range, which is patentably distinguishable over the prior art. Accordingly, withdrawal of the

outstanding rejection and the allowance of all claims now pending are respectfully requested and earnestly solicited.

Respectfully submitted,

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- Enc.: 1. Petition for Three-Month Extension of Time for Response;
2. *Request for Continued Examination*, pursuant to 37 C.F.R. §1.114;
3. EFT for \$930.00 (*Request for Continued Examination* + Three-Month Extension Fee);
4. *SRI International, Inc. v. Internet Securities Systems, Inc.*, Appeal No. 2007-1065 (Fed. Cir., 1/8/2008) ("NPL Document"); and,
5. Documentation from European Patent Office and German patent attorney, Dr. Wilfried Pöhner, regarding Applicants' German priority claim ("NPL Document").

The Commissioner for Patents is hereby authorized to charge the Deposit Account of Applicant's Attorney (*Account No. 19-0450*) for any fees or costs pertaining to the prosecution of the above-identified patent application, but which have not otherwise been provided for.